

ABSTRACT OF THE DISCLOSURE

An apparatus and method for determining a physical parameter of features on a substrate by illuminating the substrate with an incident light covering an incident wavelength range $\Delta\lambda$, e.g., from 190 nm to 1000 nm, where the substrate is at least semi-transparent. A response light received from the substrate and the feature is measured to obtain a response spectrum of the response light. Further, a complex-valued response due to the feature and the substrate is computed and both the response spectrum and the complex-valued response are used in determining the physical parameter. The response light is reflected light, transmitted light or a combination of the two. The complex-valued response typically includes a complex reflectance amplitude, a complex transmittance amplitude or both. The apparatus and method take into account the effects of vertical and lateral coherence length and are well suited for examining adjacent features.